

In the Claims:

1. (currently amended) A method of improving synthesized speech quality in a speech coding system including an encoder and a decoder, said method comprising:

obtaining an input speech signal by said encoder;

coding said input speech signal by said encoder using a Code Excited Linear Prediction (CELP) coder to generate CELP ~~code~~ coding parameters for synthesis of said input speech signal; and

generating a plurality CELP speech frames by said encoder, each of said plurality CELP speech frames including said CELP coding parameters;

~~using~~ creating a plurality of voicing indexes by said encoder, wherein each of said plurality of voicing indexes ~~representing~~ relates to a characteristic of said input speech signal;
and

transmitting each of said plurality of voicing indexes as part of each of said plurality of CELP speech frames by said encoder to said decoder for ~~in~~-enhancing said synthesis of said input speech signal.

2. (currently amended) The method of claim 1, wherein at least one of said plurality of voicing indexes relates to a periodicity characteristic of said input speech signal ~~is periodicity of said input speech.~~

3. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of said input speech is by~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive highpass filter by said decoder ~~with said~~

~~voicing index to enhance high frequency region during said coding.~~

4. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of~~
~~said input speech is by~~ at least one of said plurality of voicing indexes provides information from
said encoder to said decoder for controlling an adaptive perceptual weighting filter by said
decoder in said Code Excited Linear Prediction coder with said voicing index.

5. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of~~
~~said input speech is by~~ at least one of said plurality of voicing indexes provides information from
said encoder to said decoder for controlling an adaptive Sinc window by said decoder used in
said Code Excited Linear Prediction coder for pitch contribution with said voicing index.

6. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of~~
~~said input speech is by~~ at least one of said plurality of voicing indexes provides information from
said encoder to said decoder for controlling a spectrum tilt of said input speech signal by short-
term enhancement of a fixed-codebook of by said decoder Code Excited Linear Prediction coder
with said voicing index.

7. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of~~
~~said input speech is by~~ at least one of said plurality of voicing indexes provides information from
said encoder to said decoder for controlling a perceptual weighting filter by said decoder of said
Code Excited Linear Prediction coder with said voicing index.

8. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of said input speech is by~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a linear prediction coder by said decoder of said Code Excited Linear Prediction coder with said voicing index.

9. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of said input speech is by~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a pitch enhancement fixed-codebook by said decoder of said Code Excited Linear Prediction coder with said voicing index.

10. (currently amended) The method of claim 1, wherein ~~said enhancing said synthesis of said input speech is~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for by controlling a post pitch enhancement by said decoder of said Code Excited Linear Prediction coder with said voicing index.

11. (currently amended) The method of claim 1, wherein at least one of said plurality of voicing indexes is for use by said decoder to select at least one sub-codebook from a plurality of sub-codebooks ~~of said Code Excited Linear Prediction coder based on said characteristic of said input speech signal.~~

12. (currently amended) A method of improving synthesized speech quality in a speech coding system including an encoder and a decoder, said method comprising:
receiving a plurality of Code Excited Linear Prediction (CELP) speech frames by said

decoder from said encoder;

~~obtaining code~~ a plurality of CELP coding parameters by decoding each of said plurality of CELP speech frames by said decoder of an input speech signal;

obtaining a plurality of voicing indexes by decoding each of said plurality of CELP speech frames by said decoder for use by said decoder for in enhancing synthesis of said input speech signal from said code parameters, wherein each of said plurality of voicing indexes representing relates to a characteristic of said input speech signal; and

~~processing said code parameters through a Code Excited Linear Prediction coder using information provided by said voicing index to generate~~ generating a synthesized version of said input speech signal using said plurality of CELP coding parameters and said plurality of voicing indexes by said decoder.

13. (currently amended) The method of claim 12, wherein at least one of said plurality of voicing indexes provides relates to a periodicity characteristic of said input speech signal.

14. (currently amended) The method of claim 12, wherein at least one of said plurality of voicing indexes provides characteristics of information from said encoder to said decoder for controlling an adaptive highpass filter by said decoder used to enhance high frequency region of said excitation during generation of said code parameters for said input speech.

15. (currently amended) The method of claim 12, wherein at least one of said plurality of voicing indexes provides characteristics of information from said encoder to said decoder for controlling an adaptive perceptual weighting filter by said decoder used to enhance perceptual

~~quality of said input speech during generation of said code parameters for said input speech.~~

16. (currently amended) The method of claim 12, wherein at least one of said plurality of voicing indexes provides characteristics of information from said encoder to said decoder for controlling an adaptive Sinc window for pitch contribution by said decoder ~~used to enhance perceptual quality of said input speech during generation of said code parameters for said input speech.~~

17. (currently amended) The method of claim 12, wherein ~~said enhancing synthesis of said input speech is by~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a spectrum tilt of said input speech signal by short-term enhancement of a fixed-codebook by said decoder ~~of said Code Excited Linear Prediction coder with said voicing index.~~

18. (currently amended) The method of claim 12, wherein ~~said enhancing of said synthesis of said input speech is by~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a linear prediction coder filter by said decoder ~~of said Code Excited Linear Prediction coder with said voicing index.~~

19. (currently amended) The method of claim 12, wherein ~~said enhancing of said synthesis of said input speech is by~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a pitch enhancement fixed-codebook by said decoder ~~of said Code Excited Linear Prediction coder with said voicing index.~~

20. (currently amended) The method of claim 12, wherein ~~said enhancing said synthesis of said input speech is by~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling a post pitch enhancement by said decoder of ~~said Code Excited Linear Prediction coder with said voicing index.~~

21. (currently amended) The method of claim 12, wherein said decoder uses at least of said plurality of said voicing indexes selects at least one sub-codebook from a plurality of sub-codebooks ~~of said Code Excited Linear Prediction coder based on said characteristic of said input speech signal.~~

22. (currently amended) An ~~apparatus~~ encoder for improving synthesized speech quality of an input speech signal, said encoder comprising:

a receiver configured to receive an- said input speech signal by said encoder;

a Code Excited Linear Prediction (CELP) coder for coding said input speech signal configured to generateing CELP codeing parameters for synthesis of said input speech signal, configured to generate a plurality CELP speech frames, each of said plurality CELP speech frames including said CELP coding parameters, and further configured to ;and create a plurality of voicing indexes relating to having a characteristic of said input speech signal;

a transmitter configured to transmit each of said plurality of voicing indexes as part of each of said plurality of CELP speech frames by said encoder to a decoder for use in enhancing said synthesis of said input speech signal.

23. (currently amended) The ~~apparatus~~ encoder of claim 22, wherein at least one of said plurality of voicing indexes relates to a periodicity characteristic of said input speech signal is periodicity of said input speech.

24. (currently amended) The ~~apparatus~~ encoder of claim 22, wherein ~~said characteristic of said input speech is a characteristic of~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive highpass filter by said decoder used to enhance high frequency region of said excitation during said coding.

25. (currently amended) The ~~apparatus~~ encoder of claim 22, wherein ~~said characteristic of said input speech is a characteristic of~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive perceptual weighting filter by said decoder used in said Code Excited Linear Prediction coder.

26. (currently amended) The ~~apparatus~~ encoder of claim 22, wherein ~~said characteristic of said input speech is a characteristic of~~ at least one of said plurality of voicing indexes provides information from said encoder to said decoder for controlling an adaptive Sinc window by said decoder used in said Code Excited Linear Prediction coder.

27. (currently amended) The ~~apparatus~~ encoder of claim 22, wherein at least one of said plurality of voicing indexes is for use by said decoder to select at least one sub-codebook from a plurality of sub-codebooks of said Code Excited Linear Prediction coder based on said characteristic of said input speech signal.

28. (currently amended) ~~An apparatus~~ decoder for improving synthesized speech quality of an input speech signal, said method comprising:

a receiver configured to receive a plurality of Code Excited Linear Prediction (CELP) speech frames from an encoder based on said input speech signal,

wherein said decoder obtains a set of code plurality of CELP coding parameters of an input speech signal by decoding each of said plurality of CELP speech frames, and wherein said decoder obtains a plurality of voicing indexes by decoding each of said plurality of CELP speech frames, each of said plurality of voicing indexes relating to a characteristic of said input speech signal; wherein said decoder

~~a voicing index for use in enhancing synthesis of said input speech signal from said code parameters; and~~

~~a Code Excited Linear Prediction coder using said code parameters and information provided by said voicing index to generate a synthesized version of said input speech signal using said plurality of CELP coding parameters and said plurality of voicing indexes by said decoder.~~

29. (currently amended) The ~~apparatus~~ decoder of claim 28, wherein at least one of said plurality of voicing indexes provides relates to a periodicity characteristic of said input speech signal.

30. (currently amended) The ~~apparatus~~ decoder of claim 28, wherein at least one of said plurality of voicing indexes provides characteristics of information from said encoder to said

decoder for controlling an adaptive highpass filter by said decoder ~~used to enhance high frequency region of said excitation during generation of said code parameters for said input speech.~~

31. (currently amended) The ~~apparatus~~ decoder of claim 28, wherein at least one of said plurality of voicing indexes provides ~~characteristics of~~ information from said encoder to said decoder for controlling an adaptive perceptual weighting filter by said decoder ~~used to enhance perceptual quality of said input speech during generation of said code parameters for said input speech.~~

32. (currently amended) The ~~apparatus~~ decoder of claim 28, wherein at least one of said plurality of voicing indexes provides ~~characteristics of~~ information from said encoder to said decoder for controlling an adaptive Sinc window for pitch contribution by said decoder ~~used to enhance perceptual quality of said input speech during generation of said code parameters for said input speech.~~

33. (currently amended) The ~~apparatus~~ decoder of claim 28, wherein said decoder uses at least of said plurality of said voicing indexes selects at least one sub-codebook from a plurality of sub-codebooks ~~of said Code Excited Linear Prediction coder based on said characteristic of said input speech signal.~~

34. (currently amended) ~~A~~ The method of claim 1, wherein improving synthesized speech

quality comprising:

~~generating a plurality of frames from an input speech signal;~~
~~coding each frame of said plurality of frames using a Code Excited Linear Prediction~~
~~coder to generate code parameters for synthesis of said each frame of said input speech; and~~
~~transmitting a voicing index having each of said plurality of voicing indexes has a~~
plurality of bits indicative of a classification of ~~said~~ each frame of said plurality of CELP speech
frames ~~input speech~~.

35. (original) The method of claim 34, wherein said plurality of bits are three bits.

36. (original) The method of claim 34, wherein said classification is indicative of
periodicity of said input speech signal.

37. (currently amended) The method of claim 34 12, wherein ~~said classification is~~
~~indicative of an irregular voiced speech signal~~ each of said plurality of voicing indexes has a
plurality of bits indicative of a classification of each frame of said plurality of CELP speech
frames.

38. (currently amended) The method of claim 34 37, wherein ~~said classification is~~
~~indicative of a periodic index~~ plurality of bits are three bits.

39. (currently amended) The method of claim 38 37, wherein ~~said periodic index ranges~~

~~from low periodic index to high periodic index~~ classification is indicative of periodicity of said input speech signal.

40. (currently amended) ~~A method of improving synthesized speech quality comprising:~~
~~receiving a frame of an input speech signal, said frame having a plurality of code~~
~~parameters and a voicing index, wherein said voicing index comprises a plurality of bits;~~
~~determining a classification for said frame of said input speech signal from said plurality~~
~~of bits of said voicing index; and~~
~~decoding said frame using a Code Excited Linear Prediction coder based on said~~
~~classification to synthesize said input speech~~ The encoder of claim 22, wherein each of said
plurality of voicing indexes has a plurality of bits indicative of a classification of each frame of
said plurality of CELP speech frames.

41. (currently amended) The ~~method~~ encoder of claim 40, wherein said plurality of bits are three bits.

42. (currently amended) The ~~method~~ encoder of claim 40, wherein said classification is indicative of a noisy speech signal.

43. (currently amended) The ~~method~~ decoder of claim 40 ~~28, wherein said classification~~
~~is indicative of an irregular voiced speech signal~~ wherein each of said plurality of voicing
indexes has a plurality of bits indicative of a classification of each frame of said plurality of
CELP speech frames.

44. (currently amended) The ~~method~~ decoder of claim 40, wherein said classification is indicative of a periodic index.

45. (currently amended) The ~~method~~ decoder of claim [44] 40, wherein said periodic index ranges from a low periodic index to a high periodic index.